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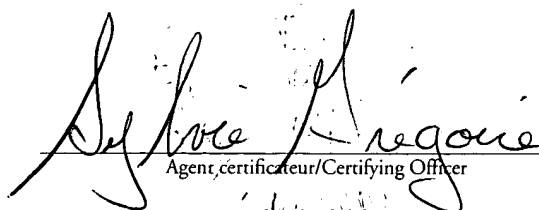
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Specification and Drawings, as originally filed, with Application for Patent Serial No:
2,392,663, on July 12, 2002, by DWAYNE HAYWORTH, for "Pivoting Fifth Wheel
Hitch Trailer Pin Assembly".


Agent, certificateur/Certifying Officer

July 9, 2004

Date

Canada

(CIPO 68)
04-09-02

OPIC  CIPO

ABSTRACT

A fifth wheel trailer pin assembly characterized by having a horizontally pivoting joint to reduce the transmission of lateral flex and stress between the units coupled by the hitching assembly. The trailer pin assembly is designed to be used with conventional fifth wheel locking assemblies, which are designed to allow for horizontal rotation of the trailer pin within the locking assembly and for longitudinal pivoting between the units coupled by the hitching assembly, to provide a fifth wheel hitching system which minimizes the transmission of unwanted forces and stresses between the units that are coupled together.

DESCRIPTION**PIVOTING FIFTH WHEEL HITCH TRAILER PIN ASSEMBLY****5 BACKGROUND OF THE INVENTION****1. Field of the Invention.**

The invention pertains to trailer hitches and more particularly to fifth wheel trailer hitches.

10 More specifically, the invention relates to trailer pin assembly portion of a fifth wheel hitching system.

2. Background

15 Fifth wheel trailer hitches have long been used to connect the tractors of semi-trailer truck combinations, or smaller trucks, to a trailer. Commonly a fifth wheel trailer hitch system consists of a fifth wheel locking assembly which is mounted on the truck and a fifth wheel trailer pin assembly which is mounted on the trailer.

20 Conventional fifth wheel trailer pin assemblies consist of a kingpin and skid plate, which are attached to the trailer. When the kingpin enters a jaw-like slot in a fifth wheel locking assembly the locking assembly firmly closes on the kingpin, thus mating the trailer pin assembly and the locking assembly into the complete fifth wheel trailer hitch system.

25 3. Problems with Fifth Wheel Hitching Assemblies

A problem suffered by conventional fifth wheel hitching systems is that there is no horizontal flex for accommodating side-to-side rocking movement about the axis which generally extends from the front of the towing vehicle to the rear of the trailer. Therefore it
30 can be very difficult to couple, or uncouple, the towing vehicle and the trailer when they are

at differing cants due to uneven ground. Further, undesirable forces can be transferred from the truck to the hitching system and to the trailer (and vice versa), thus increasing wear and tear on all components and increasing the likelihood of a component failure.

5 4. Existing Solution

Previous inventors have addressed the lack of horizontal flex in conventional fifth wheel hitching assemblies by devising a fifth wheel locking assembly which is capable of pivoting horizontally as well as vertically. The difficulty with this type of solution is that the locking
10 assembly is the most complex part of the hitching assemble and therefore required a complex invention to add the capability of horizontal flex to the locking assembly.

5. Proposed Solution

15 Pivoting Fifth Wheel Hitch Trailer Pin Assembly invention for which this patent application is for, solves the conventional fifth wheel hitching assembly's lack of horizontal flex by having a horizontally pivoting joint in the fifth wheel trailer pin assembly. The pivoting joint allows for the kingpin of an uncoupled trailed to be easily alined with the slot in the fifth wheel locking assembly and the pivoting joint reduces the transmission of lateral forces
20 and stress between units coupled by the hitching assembly.

~~The Pivoting Fifth Wheel Hitch Trailer Pin Assembly~~ provides a mechanically simple solution to the lack of horizontal flex problem. The simplicity of the Pivoting Fifth Wheel Hitch Trailer Pin Assembly reduced the cost of production and reduces the number of parts
25 which may be susceptible to structural failure.

With the Pivoting Fifth Wheel Hitch Trailer Pin Assembly When the towing unit and the trailer unit are not connected the pivoting joint in the Pivoting Fifth Wheel Hitch Trailer Pin Assembly allows the kingpin to be easily alined with the slot in the fifth wheel locking
30 assembly, even when not on level ground. When a towing unit and a traller unit are connected with the Pivoting Fifth Wheel Hitch Trailer Pin Assembly, each unit is able to

orientate itself with the ground without being adversely affected by the orientation of the unit to which it is coupled to.

6. Brief Description of the Drawings

5 Figure 1 shows a side view of the apparatus, Figure 2 shows a 50% cross sectional side view of the apparatus revealing a more detailed viewing of the pivot joint, and Figure 3 shows a front view of the apparatus.

10 7. Detailed Description of the Embodiment of the Apparatus

With reference to Figure 1, the apparatus consists of a standard collar (1) which may be attached to a trailer by a variety of existing means, a pivoting joint (2) which is the novel feature of the apparatus and provides for the horizontal flex in the trailer pin assembly, a
15 conventional skid plate (3), and a conventional king pin (4) which is to be inserted into the locking jaws of a fifth wheel locking assembly.

As more clearly shown in Figure 3, the pivot joint consists of a cylindrical sleeve (5) which passes horizontally along the fore and aft axis through the collar (1), a bracket assembly
20 (6) which is attached to the skid plate (3), a roller pin (7) which is inserted into the sleeve (5) and through both arms of the bracket assembly (6) and is secured in each arm of the bracket assembly by two bushing caps (8). In this shown embodiment a grease nipple (9)
is provided to allow for lubrication to be inserted through a drilled passageway into the space between the sleeve (5) and the roller pin (7) which allows for the roller pin (7) to
25 rotate within the sleeve (5), providing horizontal flex in the fifth wheel hitching system to accommodate side-to-side rocking movements and reducing the transfer of horizontal twisting forces.

Although the invention is described in terms of the illustrated embodiment, various
30 changes and modifications may be made to the illustrated embodiment without departing from the spirit or scope of the invention.

CLAIMS**I Claim:**

1. A fifth wheel hitch trailer pin assembly for connecting a trailer to a towing vehicle which is equipped with a fifth wheel trailer hitch trailer pin assembly consisting of: a collar to attach the trailer pin assembly to the trailer; a skid plate and king pin to attach to the fifth wheel hitch locking assembly of the towing vehicle; and a pivot joint to attachment the collar to the skid plate.
 2. A fifth wheel hitch trailer pin assembly as defined in claim 1 is further characterized by: having a pivot joint consisting of a roller pin situated inside of, and able to rotate within, a sleeve; having the said sleeve situated through the collar of the trailer pin assembly, horizontally along the centre of the fore and aft axis of the collar; having each end of the said pin attached to an arm of bracket assembly by a bushing cap; having the bracket assembly attached to the skid plate; having a grease nipple connected to a passageway into the said sleeve, enabling a lubricant to be inserted into the space between the sleeve and the roller pin, which allows the roller pin to rotate within the sleeve and the skid plate and king pin to pivot in relation to the collar.
 3. A fifth wheel hitch trailer pin assembly as defined in claim 2 is further characterized as being a novel combination of items into a new and useful trailer pin assembly, by being the first trailer pin assembly to incorporate a pivot joint into the trailer pin assembly.
 4. A fifth wheel hitch trailer pin assembly as defined in claim 3 is further characterized by: the pivot joint being situated in such a manner as to allow the forces resulting from any side-to-side movement of the towing vehicle to cause the pivoting joint to rotate, allowing the said side-to-side forces to not be transferred to the trailer.
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5. A fifth wheel hitch trailer pin assembly as defined in claim 4 is further characterized by: the pivot joint being situated in such a manner as to allow the forces resulting from any side-to-side movement of the trailer to cause the pivoting joint to rotate, allowing the said side-to-side forces to not be transferred to the towing vehicle.
 6. A fifth wheel hitch trailer pin assembly as defined in claim 5 is further characterized by: the pivot joint allowing the cant of the kin pin to be easily adjusted to aline with the locking jaws of the fifth wheel locking assembly of the towing vehicle.
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FIGURE 1

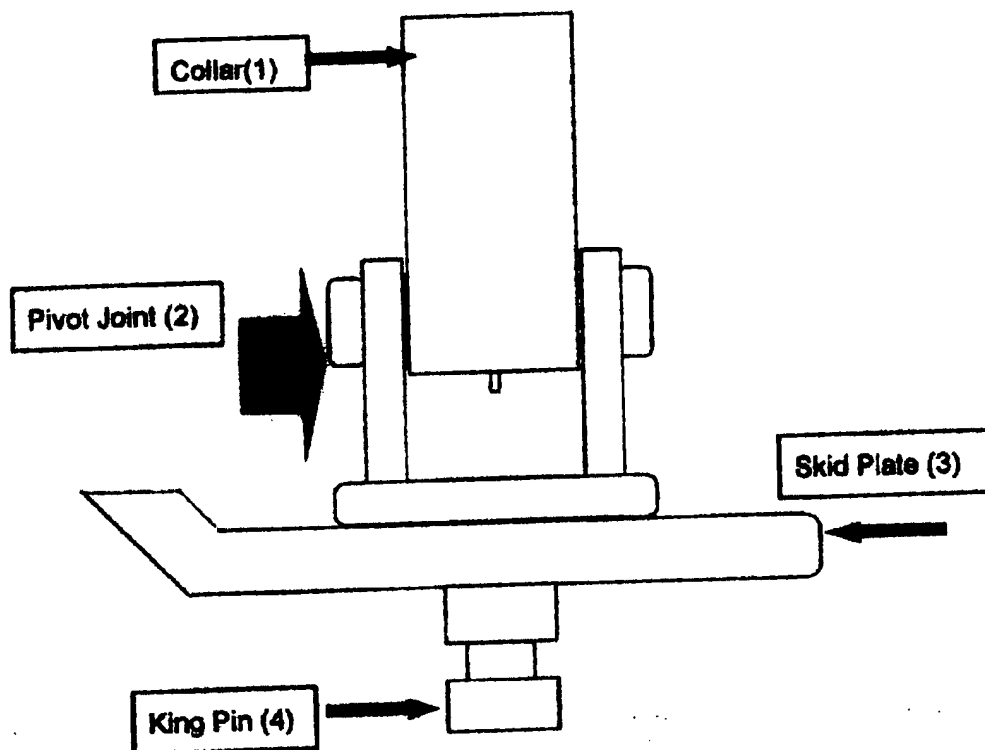


FIGURE 2

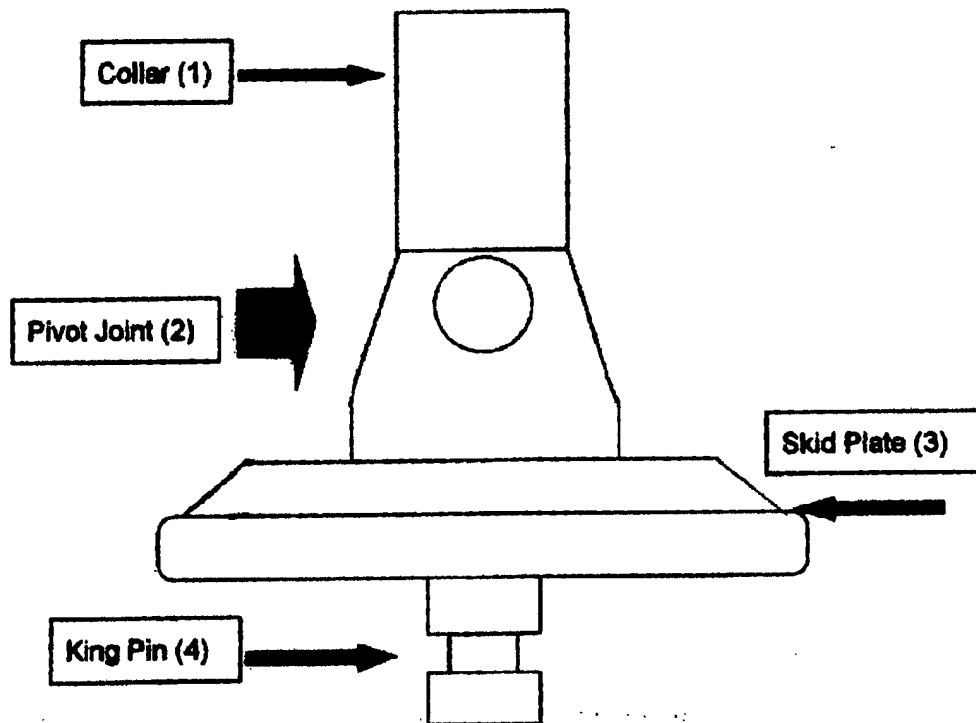


FIGURE 3

